

The Resilience of Green Finance Markets: 2021-2025

Note written by Jean-François Pons, Alphalex-Consult

"Financial markets are a combination of mathematics and human emotions."
Robert Shiller

The purpose of this article is to assess the recent evolution of green financial markets and to consider their possible future.

Financial markets offer a variety of instruments to finance green projects or activities, or the transition of companies to decarbonise their activities: Green bonds, Sustainable bonds (which finance both green and social projects), Sustainable linked bonds, Transition bonds.

The green financial markets experienced strong growth from 2015, the year of the Paris Agreement, to 2021, but since then their growth has been weaker and in some parts of these markets there have even been declines.

The geopolitical context, particularly in the United States, is affecting these markets, which have so far shown resilience.

financial market. In 2007, the European Investment Bank issued the first Green bond to finance its environmental projects. Created by private actors and multilateral development banks under the aegis of the ICMA (International Capital Markets Association 1)), the development of the Green bond market was slow until the Paris Agreement of December 2015, signed by almost all the countries of the world to combat climate change.

ICMA hosts the Green, Social, Sustainability and Sustainability-Linked Bond Principles (the "Principles"), which underpin sustainable bond issuance globally. In 2024, 97% of global sustainable bond issuance was in line with the Principles. As globally accepted market standards, the Principles are the result of extensive work and input from over 344 organisations, including issuers, investors and various other stakeholders such as external auditors.

Since the Paris Agreement, the growth of this market has been strong: \$90 billion in 2016, \$280 billion in 2020, \$570 billion in 2021. In 2022, the Climate Bond Initiative published a very optimistic forecast for this market, expecting an acceleration of this trend towards \$1 tn in 2025. In fact, according to ICMA, issuance remained at lower levels in 2022 (\$450 bn) and 2023 (\$430 bn) and increased slightly to \$533 bn.

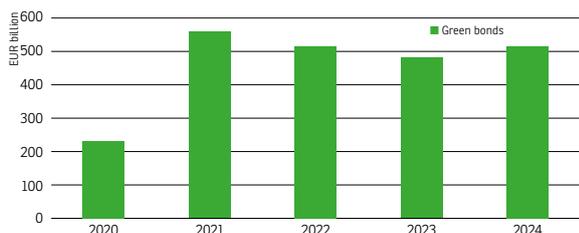
1. The Resilience of the Green Bond Market

1.1 The Market Grew in 2024 after two years of decline and stagnation

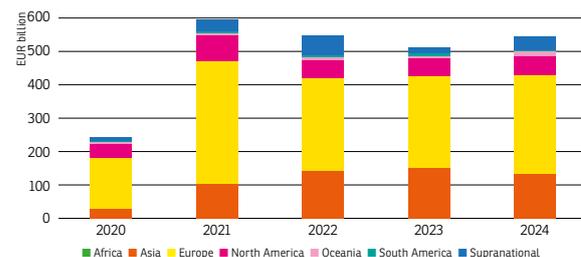
The Green bond market is the oldest sustainable

CHART 1. THE GREEN BOND MARKETS SINCE 2021

Green Bond Issuances (€ bn)

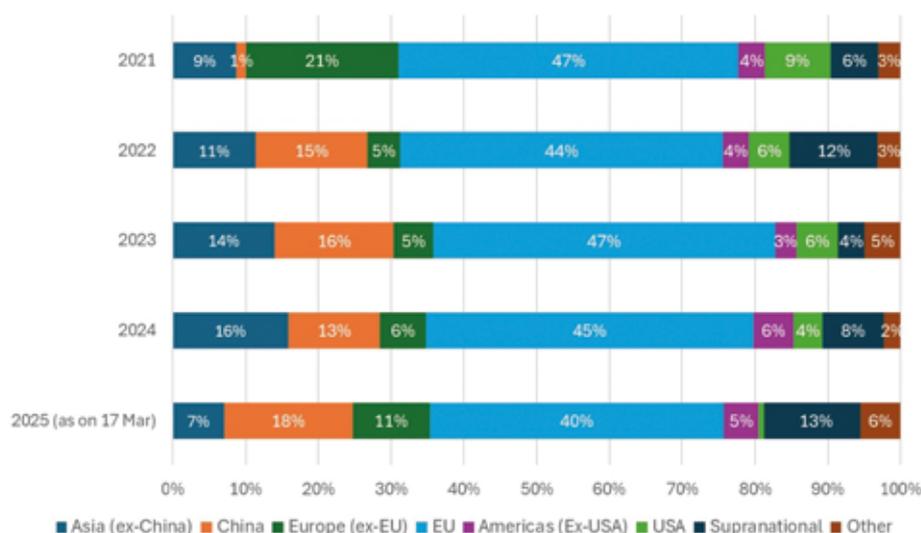


Green Bond Issuances by regions (€ bn)



The data published by Environmental Finance are at a higher level, especially for 2024. For them, the Green bond market set a new issuance record last year with \$625 billion, growing faster than the overall bond market, of which it represents 7.6%.

CHART 2. GREEN BOND ISSUANCE BREAKDOWN BY REGION (%)



1.2 Europe at the forefront, the US in decline and the Rest of the World on the rise

The European Union is the leading force in the Green bond market, accounting for between 40% and 47% of the global sustainable bond market (including Social bonds), as shown in Annex 1. China is the second largest issuer with a market share of 15-20%. Asia excluding China rises to 16% in 2024. The US share falls from 9% in 2022 to 4% in 2024.

In 2024, the largest issuer of Green bonds was the European Union (\$21 bn), the largest sovereign was the Federal Republic of Germany (\$19 bn), followed by France (\$15.4 bn), the largest financial institution was KfW (\$13.3 bn) and the largest corporate was Volkswagen Financial Services (\$9.2 bn), followed by EDF (\$5.5 bn). (Source: *Environmental Finance*).

US issuance fell to \$75 bn, representing 12% of the market. The largest issuer was Fannie Mae (\$15.2 bn), followed by California Community Choice Financing Authority (\$9 bn), New York Transportation Development Corporation (\$4.4 bn) and Air Products and Chemicals (\$2.5 bn).

China issued a total of \$50 bn in 2024. The largest issuer was ICBC (\$5.9 bn), followed by China Construction Bank (\$3.8 bn) and Agricultural Bank of China (\$3.1 bn).

European and US banks were the top lead managers for Green bonds in 2024. BNP Paribas ranked first (\$28 bn), followed by Deutsche Bank (\$22 bn), JP Morgan (\$22 bn), Credit Agricole CIB (\$21 bn) and Bank of America (£20 bn). The ranking of the top Green bond lead managers is shown in Annex 3.

1.3 Borrowers and use of proceeds in the Green Bond Market

The main categories of borrowers are sovereigns, financial institutions and corporates. The breakdown of global sustainable bonds (including Social bonds) in Annex 2 shows that sovereigns and supranationals account for almost half of the market, corporates for slightly more than a quarter and financial institutions for slightly less than a quarter.

The first use of proceeds is for renewable energy, followed by clean transport, energy efficiency and green buildings.

2. The sustainability bonds, the sustainability-linked bonds and the transition bonds: three different stories

2.1 The stability of sustainable bonds

Sustainable bonds are bonds whose proceeds are used exclusively to finance or refinance a combination of environmental and social projects. They are mainly used by large issuers: multilateral development banks – the World Bank is the largest issuer on this market – but also by sovereigns – Mexico tapped the market for \$6 bn in 2024 – or other public regional or local authorities – South Australia's Government Financial Authority issued for \$4 bn in 2024.

The volume of issuance has been fairly stable in recent years: \$1084 bn in 2021, \$891 bn in 2022, \$896 bn in 2023 and \$931 bn in 2024.

The green part of Sustainable bonds is not precisely known, which prevents further comments. It is estimated to represent at least half of the issuances in recent years.

The ranking of the top lead managers for Sustainable bonds in 2024 is shown in Annex 3. The list is very similar to that of Green bonds, with this time Citigroup at the top.

2.2 The difficulties of the sustainability-linked bond market

Sustainability-linked bonds were created in 2020. Sustainability-Linked Bonds (SLBs) are bonds whose financial and/or structural characteristics (generally the interest rate) can vary depending on whether the issuer meets pre-defined sustainability/ESG objectives. In this sense, issuers explicitly commit (including in the bond documentation) to future improvements in sustainability outcome(s) within a pre-defined timeframe. The proceeds of SLBs are intended to be used for general purposes and therefore, unlike Green bonds, the use of the proceeds does not determine their classification.

The ICMA published its Principles for Sustainability-Linked Bonds in June 2020.

After a stellar start in 2021 (\$95 bn), issuance declined in subsequent years, particularly in 2024, when it fell to \$34 bn. The issuers are mainly corporates.

There are two reasons for this: for issuers, the reputational risk of missing targets, and for the buy-side, the risk of greenwashing (if targets are too easy to achieve).

Some companies continue to believe in this market: for example, Enel (Italy), the largest issuer of SLBs, missed its targets last year, triggering higher coupons, but returned to the market in early 2025. Another example is the Dutch-Belgian retailer Ahold Delhaize, which also returned to the market in March with a €500 million issue with SLB targets for Scope 1, 2 and 3 greenhouse gas emissions and food waste reduction as KPIs.

The ranking of the top lead managers for the 2024 SLBs bonds is shown in Appendix 3. The list is also very similar to that for Green bonds, with this time BNP Paribas at the top.

2.3 The start of transition bonds

Transition bonds are designed to finance a company's transition to reducing its carbon emissions (or, less frequently, its environmental impact). The issuer is required to use the proceeds to finance projects related to the climate transition,

such as the reduction of carbon emissions from a steel plant, which could not be financed by a green bond. These bonds then complement Green bonds.

Most Transition Bond issuance has taken place in Japan, where they are a key part of a multi-annual decarbonisation transition programme designed by the Japanese government in collaboration with the "hard to abate" sectors (steel, cement, paper, chemicals...) and the financial sector.

In 2024, the amount of Transition bonds issued reached \$33 billion, most of them in Japan. The Japanese government issued two transition bonds of 5.3 billion dollars each.

3. In 2025, these markets are expected to stabilise

3.1 In 2025, the geopolitical context will not help the green financial markets

Firstly, the Trump administration's crusade against "green" activities will have a negative impact on US issuance, which should continue to decline. However, given the continued investment by parts of the private sector and some state and local governments, and the already low penetration of Green bonds in the US markets, a significant further decline is not expected.

In the European Union, while the objectives of the Green Deal have not changed, the continuation of the Green Deal programme has faced some headwinds: political criticism from businesses and right-wing and far-right political parties that gained support in the recent European and national elections, a reduction in some public finance support in a number of countries, and other geopolitical priorities such as competitiveness and defence.

3.2 However, there are positive factors that should support the market

First, the Green bond market is now 10 years after the Paris Agreement, which gave the market a boost, and the first issues are starting to mature. With new records in Green bond maturities, there will be a huge refinancing need, especially for European issuers. Furthermore, within sovereigns, we could expect more sovereigns to issue Green bonds. In Europe, only Finland, Portugal and Greece have not issued green debt, but Greece has mentioned it as a potential instrument in its 2025 funding plan. In addition to European sovereign

issuance, the EU as a whole remains a very large issuer of Green bonds, with the financing of its planned €250 bn of Green bonds by 2026 under NextGen EU. And in many emerging or even developing markets, we have already seen a number of sovereigns become the first to issue green bonds in their countries, and this move is likely to accelerate. For example, the Kingdom of Saudi Arabia has issued its first Green bond (\$1.5 bn) in February 2025.

Outside Europe, China is expected to remain a major issuer in the market. It is more difficult to predict whether the Green bond market will grow significantly in the rest of Asia, the Americas (excluding the US) and Africa.

The green part of Sustainability bonds is expected to follow the same trend as Green bonds. The interest of this market is to provide larger issues to finance green and social projects. And since the beginning of 2025, large issuers used to this market have continued to borrow on it.

The Sustainability-linked bond market has suffered a significant decline in 2024, but a number of companies seem to be attached to it and we have also seen sovereigns using this market, such as Thailand recently. The activity in this market since the beginning of 2025 is at the same level as in 2024.

The challenge for the new Transition bond market, which is mainly used in Japan at the moment, is to extend its reach to other countries. Its rationale could attract other countries, in line with the will of part of the market to finance not only green projects, but also the transition of 'brown' companies based on their transition plans. This could be the case in the Asia-Pacific region, with a significant regulatory push in Singapore, Hong Kong and Australia.

3.3 Most experts predict that the total issuance of Green Bonds, Sustainability Bonds, Sustainability Linked Bonds and Transition Bonds will remain stable or grow slightly

For example, DZ Bank forecasts 5% growth in the total sustainable bond market (including Social bonds, the volume of which should be stable) in 2025, with growth in Europe and Asia outpacing the decline in the US.

Moody's Ratings has an interesting forecast for 2025 (Environmental Finance). They expect the Green bond market to remain resilient with around \$620 bn of issuance (source: Environmental Finance), with an increase in climate adaptation and conservation projects. They forecast \$175 bn of issuance for Sustainability bonds and \$35 bn

for Sustainability-linked bonds. Finally, they expect \$20 bn of Transition bond issuance, largely concentrated in Japan.

They expect climate change to account for 50% of the market, as it has for the past two years. While renewable energy, energy efficiency and clean transport are the dominant project types, other project types are growing, such as the financing of clean energy for data centres in the Asia-Pacific region.

Conclusion

Green finance markets have been fairly stable in volume in recent years and have made a welcome contribution to the financing of climate – and environment-related investments, accounting for almost 10% of the total global bond market.

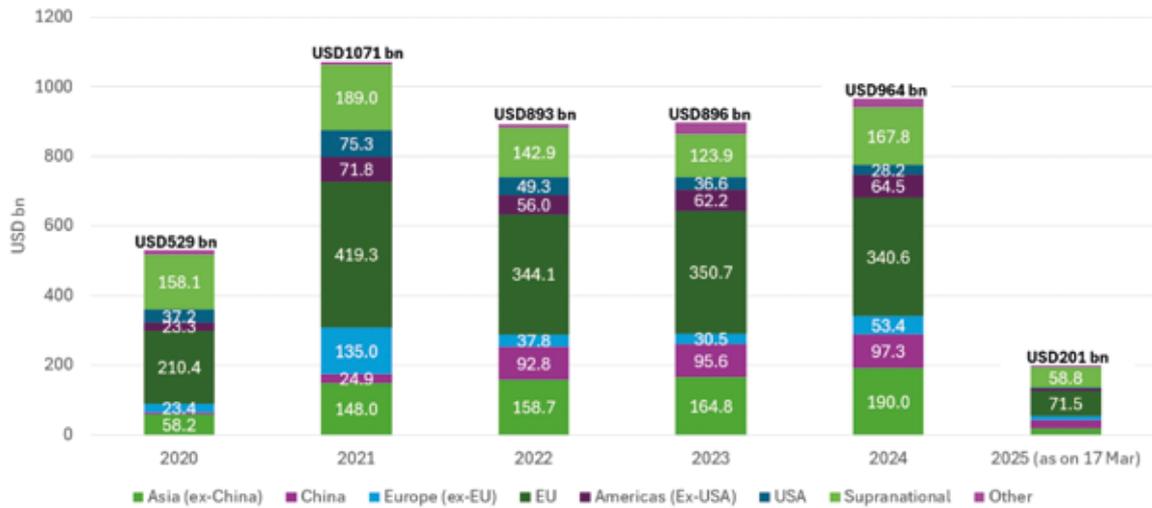
Despite a less favourable political context, particularly in the US, they should remain resilient in 2025, firstly in Europe, the leader in these markets, but also because of the expected increase in new entrants in the rest of the world.

Bibliography

- ICMA: "Sustainable Finance" in the ICMA Quarterly Report for the first quarter of 2025, January 2025.
- Environmental Finance: "Sustainability Bond Insights 2025", February 2025.
- Environmental Finance: "Resilience, innovation and reinvention: the sustainable bond market in 2025", February 2025.

Annex 1

CHART 3. GLOBAL SUSTAINABLE BOND MARKET (INCLUDING SOCIAL BONDS) BY REGION FROM 2020 TO THE BEGINNING OF 2025 (ICMA)



Annex 2

CHART 4. BREAKDOWN OF GLOBAL SUSTAINABLE BONDS PER TYPE OF ISSUER



Annex 3

CHART 6. TABLE OF THE LEAD MANAGERS (ENVIRONMENTAL FINANCE)

Top 15 Lead managers of 2024

Lead manager	Value (\$M)
BNP PARIBAS	42,431
J.P.Morgan	40,735
BANK OF AMERICA	36,965
citi	36,889
HSBC	36,671
Deutsche Bank	34,555
CREDIT AGRICOLE	33,331
BARCLAYS	29,669
Morgan Stanley	27,009
SOCIETE GENERALE	23,121
Goldman Sachs	22,119
NatWest	21,236
NOMURA	20,491
KfW	19,068
NATIXIS	18,815

Methodology: the value of bonds with multiple lead managers was pro-rated equally to each lead manager.

Top 5 lead managers for EUR denominated bonds in 2024

Lead manager	Value (\$M)
BNP PARIBAS	27,504
CREDIT AGRICOLE	25,302
Deutsche Bank	23,362
SOCIETE GENERALE	20,945
J.P.Morgan	20,500

Top 5 lead managers for USD denominated sustainable bonds in 2024

Lead manager	Value (\$M)
BANK OF AMERICA	20,105
citi	18,325
J.P.Morgan	18,066
HSBC	14,657
Morgan Stanley	14,190

Top 5 lead managers for JPY denominated sustainable bonds in 2023

Lead manager	Value (\$M)
MIZUHO	8,286
SMBC	7,923
NOMURA	7,750
Daiwa	7,406
Woori Bank	4,674